Sensor-less d t rmination of load torque and time curv of slip in convert r-controlled asynchronous motor - m asuring voltage and curr nt, determining quivalent inductance and resistance, measuring curr nt, voltage and slip of unloaded motor and ge

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Equivalents:

Abstract

The time curve of the electric voltage (u(t)) and the resulting flow of electric current (i(t)) is measured at the terminals of the asynchronous motor. The measurement values of current and voltage are fed in to the processor and the voltage (u(t)) of an associated equivalent inductance (l'(t)) and an equivalent resistance (r'(t)) is determined.

During a running of the unloaded motor at two different times (t) at least, the associated pair of values of current and voltage and the respective slip (s(t)) are measured. The equivalent inductance (l'o) for the disappearing slip and a fading constant (a) are determined by the processor from the slip (s(t)) and the equivalent inductance (l'(t)) using the relationship:

l'(t) = l'o . e<-a> .3. s(t), where a is a decay constant. The processor determines the time curve of the associated load torque (mL(t)), from the time curve of the slip (s)t)) over the rotor rpm (n(t)).

ADVANTAGE - No sensors and in general no auxiliary components are necessary, in order to determine electrical and mechanical variables.